

REMARKS

By this amendment, claims 1-9 and 90-106 are pending in this application. Claims 90-106 are being added and these claims are fully supported by the Specification and add no new matter. Accordingly, entry of the added claims is respectfully requested.

Claims 10-89 are being canceled without prejudice or disclaimer.

Reconsideration of the pending claims is respectfully requested in view of the remarks made herein.

Claim Rejections Under 35 U.S.C. §103(a)

I. **Claims 1-7, 10, 12-22, 33-45, 56-86 and 89 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 5,985,092 issued to Chiu et al. in view of U.S. Patent 5,961,850 issued to Satou et al.**

Applicant has prepared, and will submit, a Declaration from Michael Grimbergen that antedates the present invention over Chiu et al. Consequently, Chiu et al. is not prior art.

Satou et al. by itself does not teach claim 1 as a whole. The Office Action cites Satou et al. for teaching "ICP plasma reactors having the claimed coil configurations (see figures 5 and 7)." However, Satou et al. does not teach a method of processing a substrate in a process chamber comprising a wall, the method comprising providing a substrate in a the process chamber, the substrate having a surface introducing a gas into the process chamber; energizing the gas by passing RF energy through the wall of the process chamber to the gas inside the process chamber to energize the gas; detecting radiation reflected from the substrate from directly above the

surface of the substrate after the radiation propagates through the wall; and evaluating the detected radiation to monitor the depth of a layer being processed on the substrate.

Satou et al. also does not teach claim 105 which is to a method of processing a substrate in a process chamber, the process chamber comprising a wall and having a non-vertical multi-turn antenna above the wall, the method comprising:

- (a) placing in the process chamber, a substrate having a layer;
- (b) introducing a gas into the process chamber;
- (c) powering the non-vertical multi-turn antenna to couple energy through the wall to the gas inside the process chamber to energize the gas to process the layer on the substrate;
- (d) detecting radiation reflected from the substrate and propagating through the wall; and
- (e) evaluating the detected radiation to monitor the depth of the layer being processed on the substrate.

Satou et al. also does not teach claim 106 which is to a method of processing a substrate in a process chamber, the process chamber comprising a ceiling and an antenna above the ceiling, the method comprising:

providing a substrate in the process chamber, the substrate having a surface;

introducing a gas into the process chamber;
energizing the gas by applying an RF current to the antenna to pass passing RF energy through the ceiling of the process chamber to the gas inside the process chamber to energize the gas;

detecting radiation reflected from the substrate from directly above the surface of the substrate after the radiation propagates through the ceiling; and evaluating the detected radiation to monitor processing of the substrate.

Thus claims 1-9 and 90-106 are not obvious over Chiu et al. and Satou et al.

II. Claims 8, 9, 24 and 25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Chiu and Satou as applied to claims 1 and 21, and further in view of U.S. Patent 5,691,540 issued to Halle et al.

Claims 8 and 9 are dependent upon claim 1.

Applicant has prepared, and will submit, a Declaration from Michael Grimbergen that antedates the present invention over Chiu et al. Consequently, Chiu et al. is not prior art.

Satou et al. does not teach claim 1 for the same reasons as provided above.

Halle et al. is cited by the Examiner to teach "a plasma process monitoring apparatus that includes a collimating lens and a bifurcated optical cable with [one] end being connected to the signal source and one end being connected to the signal detector,"

However, Halle et al. does not teach claim 1 because Halle et al. does not teach a method of processing a substrate in a process chamber comprising a wall, the method comprising providing a substrate in a the process chamber, the substrate having a surface introducing a gas into the process chamber; energizing the gas by passing RF energy through the wall of the process chamber to the gas inside the process chamber to energize the gas; detecting radiation reflected from the substrate from directly above the surface of the substrate after the radiation propagates through the wall; and evaluating the detected radiation to monitor the depth of a layer being processed on the substrate.

Halle et al. also does not teach claim 105 which is to a method of processing a substrate in a process chamber, the process chamber comprising a wall and having a non-vertical multi-turn antenna above the wall, the method comprising:

- (a) placing in the process chamber, a substrate having a layer;
- (b) introducing a gas into the process chamber;
- (c) powering the non-vertical multi-turn antenna to couple energy through the wall to the gas inside the process chamber to energize the gas to process the layer on the substrate;
- (d) detecting radiation reflected from the substrate and propagating through the wall; and
- (e) evaluating the detected radiation to monitor the depth of the layer being processed on the substrate.

Halle et al. also does not teach claim 106 which is to a method of processing a substrate in a process chamber, the process chamber comprising a ceiling and an antenna above the ceiling, the method comprising:

- providing a substrate in the process chamber, the substrate having a surface;
- introducing a gas into the process chamber;
- energizing the gas by applying an RF current to the antenna to pass passing RF energy through the ceiling of the process chamber to the gas inside the process chamber to energize the gas;
- detecting radiation reflected from the substrate from directly above the surface of the substrate after the radiation propagates through the ceiling; and
- evaluating the detected radiation to monitor processing of the substrate.

Claims 24 and 25 have been cancelled.

The above-discussed remarks are believed to place the present application in condition for allowance. Should the Examiner have any questions regarding the above remarks, the Examiner is requested to telephone Applicant's representative at the number listed below.

Respectfully submitted,

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